

Density: Objective Measure or Critical Tool of the Neoliberal Agenda?

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Introduction

What kind of vitality and intensity was actually being striven for when all parties united around the flag of “urbanity”? Was it the friction and “accident and mess” that seemed to be an important part of Jacobs’s urban vitality? Or was it the concentration of retail outlets and gentrification, the nice front of diversity and “cappuccino urbanism” that lead to a less diverse social reality? (Berghauser Pont and Haupt, 2010)¹

The publication of the planning agenda *Towards an Urban Renaissance* in 1999 and subsequent Urban White Paper published in 2000 marked a turning point in the approach towards urban development in the UK. The report was compiled by an appointed ‘Urban Task Force’ (UTF): an assembled team of architects, planners, urban designers and researchers, chaired by the architect Richard Rogers.² The report was written in reaction to the prevalent trend of de-densification of the urban landscape and rampant suburban housebuilding that dominated the last two decades of the twentieth century. Urban density was a key part of the new agenda it proposed. The report promoted reuse of former industrial sites, consolidating urban neighbourhoods and reducing expansion on greenfield sites on the edges of cities and posited urban density as an essential factor in achieving sustainable public transport systems. It championed the urban lifestyle, and promoted a vertical mix of shops, offices and residential spaces common in the vibrant, vital, centres of cities like Barcelona and Paris.³ On the

basis of these benefits, or potentialities at least, the report called for the introduction of minimum density ratios for new housing development, reversing the trend of maximum development densities that had prevailed in planning policy throughout the twentieth century.⁴ The report was premised on the belief that continued development on greenfield sites at too low densities, threatened not only the economic prosperity of UK towns and cities, but presented an ecological threat through over-consumption of land for housebuilding and fuel consumed in transporting the populace from their detached, suburban homes, to work in towns and cities.⁵

Over the past almost twenty years the objective of increasing urban densities (relative to the very low, ‘anti-urban’ densities that had characterised development in the period 1976–1999) has come to be accepted uncritically by (many within) the architectural profession. My PhD supervisor described it as akin to the polar ice-caps issue, such was the persuasiveness of the densification argument and conviction among the architectural and planning disciplines that increased urban densities were a necessary component of a sustainable urban future. While framed in numeric terms through planning policy, the new landscapes of densification would be designed, shaped and materialised by architects. Indeed, following the UTF report, UK architects seized the challenge of devising new, urbane typologies in housing, dusting off their housing and urban design skills after many decades

of being ostracised from any role in the design of housing on a large scale.

As a criterion underlying so many architectural commissions in recent decades, the mechanisms of density – the means through which it is measured and the validity with which it can be used to describe spatial or experiential conditions – deserve further consideration. The reversal of density policy at the turn of the century, while couched in positive rhetoric around sustainability and vibrancy, was also a core mechanism of the emerging financial model through which land and housing would become the ultimate inflationary commodities of neoliberal economics. Following the ‘crude deregulatory strategies’ of the 1980s and ‘rolling-back’ of state involvement in the provision of housing, by the time that the UTF report was published in the late 1990s, the political agenda had also begun to shift. As Allmendinger describes in his history of planning under the New Labour government, ‘market-supportive re-regulation’, privileging public-private partnerships was the order of the day.⁶ In terms of planning policy, this meant ‘bringing forward’ former industrial sites for development and delivering the ‘necessary strategies and institutional fixes in order to legitimise and facilitate growth’.⁷ David Harvey and others have situated the revival of interest in urban development that has taken place in the UK, USA and Western Europe over the past two decades as part of a concerted political effort to find avenues for the investment of surplus capital. Under the neoliberal process (as Harvey describes it), planning policies have been configured to both provide investment opportunities for private capital, and support financial growth for those investments, with densification as a core component of those policies.⁸

Development densities and the setting of minimum and maximum limits clearly has pronounced economic consequences. At its most basic, density is a simple ratio of matter to space. However, the

units of density are far from neutral or unpolitical. The most common measurement of density used in urban development are those of houses: dwellings per hectare (dw/ha) or habitable rooms per hectare (hr/ha). In sharing the same units as those used by real estate agents and land buyers, density ratios have quickly become adopted as effective mechanisms of development economics. In the UK, in the context of a critical housing demand defined in terms of ‘new households’, dwelling densities provide a relatively simple measure of site capacity and a crude representation of the effectiveness with which land is being used in the provision of new housing.⁹ The provision of more dwellings is equated with more efficient use of land, as well as more profit for developers whose returns are based on the number of homes sold rather than their relative size or value. As can be seen in the diagram shown in figure 1, however, different measurements incentivise different forms of housing. Maximum dwelling densities (dw/ha) incentivise building the largest homes possible on the site, maximising the amount of development permitted within the guidelines. When limits are defined in terms of habitable rooms (hr/ha), the opposite is true, and more, smaller dwellings prove more profitable.

Yet, despite its relatively narrow definition, density is far more than a simple ratio measure to be manipulated to maximise building mass. Density is also a laden term, imbued with a range of imagined qualitative associations and attributed a range of social, ecological, psychological and formal consequences – its attribution as a core ingredient of sustainable urban neighbourhoods being a clear example.¹⁰ Even where the inquiry is focused on the use of density in architectural practice and housing design in a UK context, there is a lack of distinction between density as measured and density as experienced. As psychologist Arza Churchman neatly identifies, ‘at first glance, the concept of density is wonderfully appealing to planners [and designers].

It is an objective, quantitative, and, by itself, neutral term. However, a second and third glance reveals that it is a very complex concept.¹¹

In this article, I argue that this conflation between the measured and the perceived is precisely what situates density as an ideal tool of the neoliberal agenda. In the obfuscation between measurement and meaning lies the critical capacity of density to be ideologically packaged and therefore 'sold' to consumers of urban design and planning, while at the same time providing a device through which value can be effectively measured and controlled. For those who come to inhabit the homes that have been built out under the densification agenda, those measured units of dwellings and rooms constitute the spatial framework of their everyday lives. They are the physical structures in which households and neighbourhoods are organised. As most architects concerned with the design of housing are well aware, the location, configuration and design of these homes have profound implications for the interplay of social relations, both internally within the household and externally, as part of communities.¹² Yet, in spite of this crucial role as mediators between cartesian, measured space and the lived experience of the housing created, there has been very little scrutiny of the application and implications of densification for housing architecture.

In the first section, I set out a brief history of architects' relationship with density through a series of historical episodes. The intention is to situate density as an instrument of modernity, and the architect as an agent whose skills are continually deployed in service of land-owning agencies. In the second section I draw on two recent housing developments in a rapidly densifying part of East London. The case studies are used as a means of illustrating some of the implications of densification both for the role that architects have, and for the design and spatial configuration of the new housing

as homes – spaces where people, families and communities carry out their daily lives.

Finally, these spatial manifestations are situated in relation to broader objectives of the neoliberalisation agenda, positing that the unquestioning normalisation of densification (in which architects have played a key role) has presented an opportunity for even greater exploitation of density ratios as part of the neoliberal process.

Part I: density measurements as design instrument

Cities have variously grappled with mechanisms for controlling the expanse and populace of cities (i.e. density) throughout western history. The need for containment versus the need for growth has been exercised in pursuit of defence, taxes, power and significance.¹³ However, the act of setting or prescribing density ratios for urban development is a relatively recent phenomenon, coinciding with the emergence of town planning as a scientific discipline in the early twentieth century.¹⁴ Berghauser Pont and Haupt's *Spacematrix* study traces the first use of density ratios as a design instrument back to the garden city movement in England and the early modernists in Germany. In both epochs, efforts to determine the form and layout of the city were in reaction to the conditions of too many people, dwellings and workplaces, combined with too little air, light and open space. These poor conditions led to social deprivation and ill-health in the industrial cities of late nineteenth century Europe as recorded in numerous social observations.¹⁵ In this context, mechanisms through which the number of people occupying a given amount of space could be measured and ultimately controlled were highly valued.¹⁶ While the garden cities are one of the earliest recorded examples of density ratios being deployed with a deterministic view to shape the layout, character and organisation of a townscape, there is a precursor to Ebenezer Howard's model

that highlights an important distinction between the role of town planners and that of architects.

Overcrowding and a designed solution

Until the mid-nineteenth century, architects had been relatively unconcerned with the design of housing for the working classes.¹⁷ However, from the 1850s onwards, overcrowding had begun to be recognised as compromising the improvements made to public health and sanitation. Society was concerned, not only over the physiological dangers of overcrowding, but also the moral deficiencies of so many bodies sharing so little space in sub-let houses and tenements of the industrial working classes.¹⁸ Among the first published response to these recorded deficiencies from the architectural profession were plans for Model Dwellings. The architects of the Model Dwellings sought to address the core problems of lack of hygiene and privacy with housing models that would separate individual households into small, self-contained apartments, with dedicated sanitary facilities and outdoor space.¹⁹ The housing typologies that were developed provided both improved sanitation and privacy while, crucially, allowing for the same number of households to be rehoused, maintaining the site density.

The Model Dwellings experiments highlight some important issues that have since become implicit in notions of density. For one, the assumed relationship between density and the experience of overcrowding was established. While for the architects, density ratios were seen as a means of controlling the impact of crowding, the popular conflation of the terminology was established. This stigmatised density and became a primary argument through which later proposals to redevelop urban neighbourhoods at much lower densities were promoted. Secondly, the proposed design solutions reveal the governing role of patronage in terms of architects' role in housing design. While

it is not clear whether this was set out explicitly in the architects' brief, the designs represent an early attempt to mediate between societal concerns over public health and safeguarding rental income for the landlords and investors who might commission those same architects.

Setting densities

Ebenezer Howard's *Garden Cities of To-morrow* (published 1898) demonstrates a further step in the sophisticated appropriation of density ratios. In his model for the garden city, Howard set out quotas for the 'proper arrangement of the individual buildings and the limitation of the amount of building in relation to an area of open space' – effectively, density ratios.²⁰ His model, part socio-economic thesis, part spatial planning proposition, posits a network of new towns, with a strict limit on the population and expanse of each with the intent of optimising living conditions for the town's inhabitants. Meanwhile the increase in land values generated by the conversion of agricultural land for development would be transferred to and held in a land trust for the community.²¹

Howard's ideal formed the basis for the early-twentieth century garden cities. The first of these was built at Letchworth, where Raymond Unwin and Barry Parker were commissioned as architects for the New Town in 1904. Drawing on Howard's application of density ratios as determinants of residential 'amenity', Unwin further extended this application. Whereas Howard's application of density ratios was essentially socio-political in its intent, Unwin deployed the ratio mechanism to substantiate his case for low-density, arcadian housing layouts that he envisaged for the residential parts of the New Town.²² He demonstrated that by limiting the density of development on a site, and developing a typical site in his preferred perimeter arrangement, large areas of green space could be provided for the amenity of the surrounding dwellings. Furthermore, the lower-density layout would

reduce expenditure on infrastructure compared with typical terraced streets, thereby reducing development costs. [Fig. 2]

Unwin's economic argument was set out in his 1912 publication *Nothing Gained by Overcrowding!* He presented his model with the clear purpose of persuading potential investors and private landowners of the viability of his proposal, hence, his text is an important moment in the history of architects' involvement with density. He gains authority by simultaneously visualising an enticing future housing landscape, while at the same time carefully appealing to the private economic interests of developers and landowners (i.e., potential future patrons). The beautiful and enticing renderings of an Arcadian suburban idyll presented by Parker and Unwin can be read as seductive advertisement – a necessary device in the encouragement of landowners to sell, developers to build, and households to buy in to the new garden suburbs model.

Density and early modernism: the seduction of numbers

The next significant shift in architects' use of density ratios was led most vociferously by the pioneers of early modernism in central Europe. In the 1920s, Le Corbusier's famous proposal for the redevelopment of Paris framed density as a means of optimising productivity. 'The density, which is too great as things are at present, of the districts affected by the "Voisin" plan would not be reduced. It would be quadrupled.'²³

These augmented densities would be achieved by building tall – a revolution in residential architecture. The new high-density, high-rise typologies were lauded with various attributes: the tall buildings not only liberated the ground space to enable wider, faster roads and more green space, but the collective housing models would facilitate otherwise unaffordable services for residents. As

demonstrated in the Unité d'Habitation, in-house nurseries, concierge services, not to mention internal plumbing and heating would all be enabled by the concentration of apartments on a site.

Walter Gropius was also enticed by the quasi-scientific rationality of density ratios. In his 1935 publication *The New Architecture*, he formalised what would become a rich seam of morphological study testing the relationship between density ratio, built form and sunlight. His diagrammatic studies demonstrated the simple principle that taller housing blocks, set further apart, made more efficient use of the site and generated higher site capacities. Furthermore, if site densities were fixed, then taller buildings set further apart on the site received more sunlight than lower-rise housing set close together.²⁴

Gropius's explication of a simple, rational model through which the critical components of site planning – building height, separation distances, number of dwellings, and the resulting sunlight and daylight – could be controlled, made a vital contribution to the establishment of density ratios as design instruments. Given the prevalent conception of the dangers associated with the crowded city (and therefore, density), and recent recognition of the health-giving benefits of sunlight and ventilation, this tri-part relationship gained significant traction.

As opposed to the private investment sought by the architectural protagonists in the earlier episodes, Le Corbusier and Gropius expounded their proposals in terms intended to appeal to politicians, councillors, and newly formed town planning departments. Instead of an emphasis on economic returns (as expounded by Unwin), the currency used was that of public health, convenience and modernity. In both cases, the new architectures and landscapes they proposed required the authority and mechanisms of the state

to achieve the necessary scale of implementation. Working at this scale it was possible to explicate housing forms in which a higher ratio of building mass to footprint was countered by careful control over the landscape and wider neighbourhood plan.

Inspired by the principles set out by Le Corbusier and Gropius, Abercrombie and Forshaw's 1943 *County of London Plan* applied the notion of optimal site densities to support their proposed approach for post-war redevelopment in and around London.²⁵ Based on predetermined site densities and areas of open space required for recreation, quantitative calculations could be used to determine the height of the proposed buildings, as well as the site layouts and mix of housing typologies for the redeveloped areas: in every sense, planning by numbers. As figure 3 shows, the plan included three prototypical layouts for new housing developments for three different densities. Using this principle, it could be determined that at a density of a hundred persons per acre (247 ppl/ha) up to 55 percent would be in houses and 45 percent in flats (up to three storeys). At two hundred persons per acre (500 ppl/ha) all would be flats, with 65–85 percent of them between seven and ten storeys high.

This planning methodology had two important consequences for the subsequent use of density ratios. First, it had provided the increasingly empirical disciplines of planning and architecture with a rational, quasi-scientific methodology for housing production. In this context, design intent was frequently obscured by the emphasis on numbers, particularly in the context of a national housing shortage defined quantitatively. As criticism of the housing developed by this method began to mount, it demonstrated the inadequacies of an overly quantitative approach to housing design. The other important consequence of this period was the rebranding of density. The early modernists had effectively countered the association of density with the crowded, congested conditions of

the old industrial cities using radical visual imagery that spoke of spaciousness and greenery, occasionally punctured by tall, pavilion-like structures. Meanwhile the later applications of these ideas as the prevalent planning policy for post-war housing development contributed to a new, popular association between the language of density and high-rise housing forms.²⁶ This was an important moment, establishing a stigma that would see attitudes towards density pegged alongside the increasing unpopularity of high-rise housing during the latter part of the twentieth century. Part of the critical role that architects have had in the densification agenda post-UTF has been to alter some of these common associations, but the simple tools of persuasive visualisations and neat economic viability calculations remain central to the architect's toolkit.

Beyond a formal experimentation

There was widespread criticism of the housing landscapes generated by the numbers-led approach.²⁷ From within the architectural discipline there was also concern over the autogenetic housing architecture that it produced. Perhaps most effective of these criticisms was from architect-academics Leslie Martin and Lionel March who neatly challenged the approach on its own methodological terms. They argued that the land-use efficiency-argument which had been used to underpin the need for high-rise building in the inner-cities was motivated more by stylistic impetus than rationalist calculation.²⁸ Through a series of figurative experiments, they demonstrated the fallibility of the prevalent efficiency-case for building high-rise, and presented a thorough analysis showing plot ratios to be composites of different dimensions of built form. [Fig. 4] Density ratios provided the fixed parameters within which form could be manipulated, leading to models in which building mass and open space were inverted, creating 'anti-forms', as they described them. Their experiments countered the assumption that high(er) densities automatically generated high-rise architecture by demonstrating

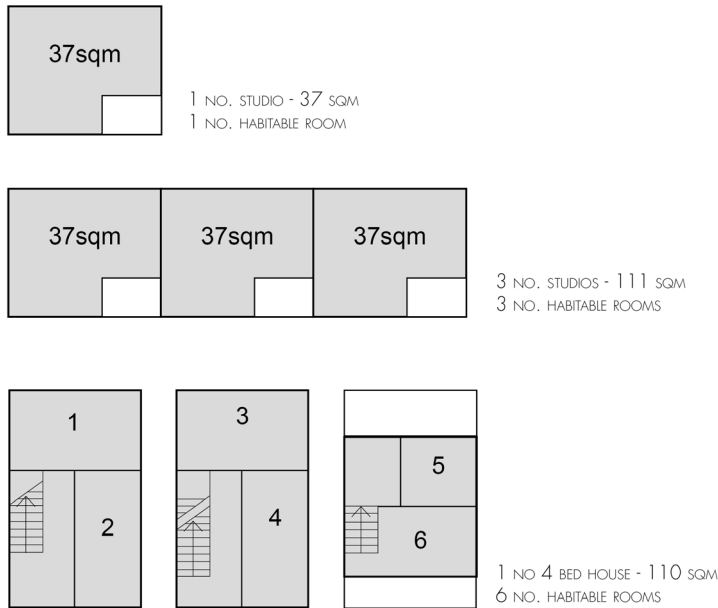


Fig 1

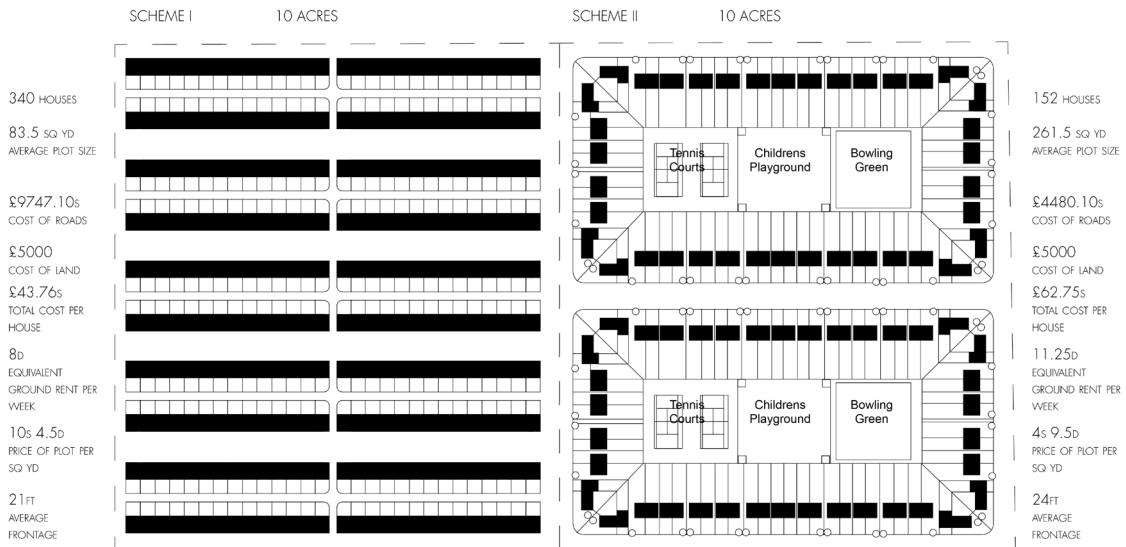


Fig 2

Fig 1: Diagram showing how the units of measurement encourage different types of development. Source: author.

Fig 2: Diagram showing Unwin's proposed perimeter layout contrasted with a typical layout of byelaw terraced streets.

Redrawn by the author based on Unwin's diagram in *Nothing Gained by Overcrowding!*

that equivalent densities could be generated with low, continuous built mass, articulated by open courtyards.

Their models are credited with informing a number of high-density, lower-rise housing schemes developed, particularly in London, during the late 1960s and 1970s. A prerequisite of these housing projects was that site density must be maintained (Local Authority revenues depended upon retaining population figures). Hence, with numbers fixed, architects were free to experiment with form and layout which could be governed by other aspirations. Neave Brown, architect of a number of these schemes, described these as 'to build low, to fill the site, to geometrically define open space, to integrate. And at the same time to return to housing the traditional quality of continuous background stuff, anonymous, cellular, repetitive, that has always been its virtue.'²⁹

As with the earlier housing landscapes of the immediate post-war years, these housing models required implementation at the neighbourhood scale. In contrast to the segregated zoning of earlier housing estates, however, these low-rise, high-density prototype schemes provided a model for integration of housing with all the other ingredients of a typical residential neighbourhood: schools, shops, parks, car-parking, with a clear hierarchy that prioritised social and community spaces over parking and transit routes.³⁰ In contrast to the earlier episodes, the housing architecture developed under this agenda demonstrated a degree of engagement by the architects with the social potential of housing architecture. They demonstrated that, beyond the formal manipulation of building mass (as so rigorously expounded by Martin and March), the units of density (i.e., rooms, houses and buildings) could be considered in ways that contributed to making convivial, sociable neighbourhoods and homes. In so doing (or at least in describing their architecture in these terms), these archetypal housing schemes also expanded the lexicon of

density, at least concerning their influence within the architectural discipline, beyond the merely formal, to include notions such as continuity, proximity and an architectural modesty, at odds with the heroic formalism of earlier decades.

The Urban Renaissance: a turning point for density and a new role for designers

During the 1970s and '80s, following heightened criticism of post-war housing, particularly in inner-urban areas, there began a process of disinvestment in the production of housing as a public asset and a gradual shift towards private development as the dominant mode of housing production in the UK.³¹ Nationally this manifested in a shift towards development on the urban peripheries (greenfield sites being the favoured option of private housebuilders), comprising diffuse landscapes of individual houses.³² The houses themselves were predominantly standard 'products', developed by housebuilders with an emphasis on shop-window attributes: front and rear gardens, driveway and garage, and perhaps an en-suite bathroom. Density ratios were of the order promoted by Unwin sixty years previously.³³ The role of architects in relation to the design and production of housing was also vastly diminished.

Historic connotations associating density with congested, overcrowded cities endured, having underlain planning policy throughout much of the previous century. Furthermore, the terminology of density was stigmatised, with 'high-density' associated with discredited and unpopular housing typologies – namely the high-rise. If the objective of increasing urban densities was to be borne out, there was significant work to do in rebranding density and re-popularising the idea of urban living. Hence the architect's role was framed enticingly and attractively: to develop a more attractive 'urban product' and re-popularise the notion of urban living.³⁴ Much was borrowed from the more compact, higher-density urban centres of continental Europe,

HOUSING MIX FOR A SITE AT 3 DIFFERENT DENSITIES

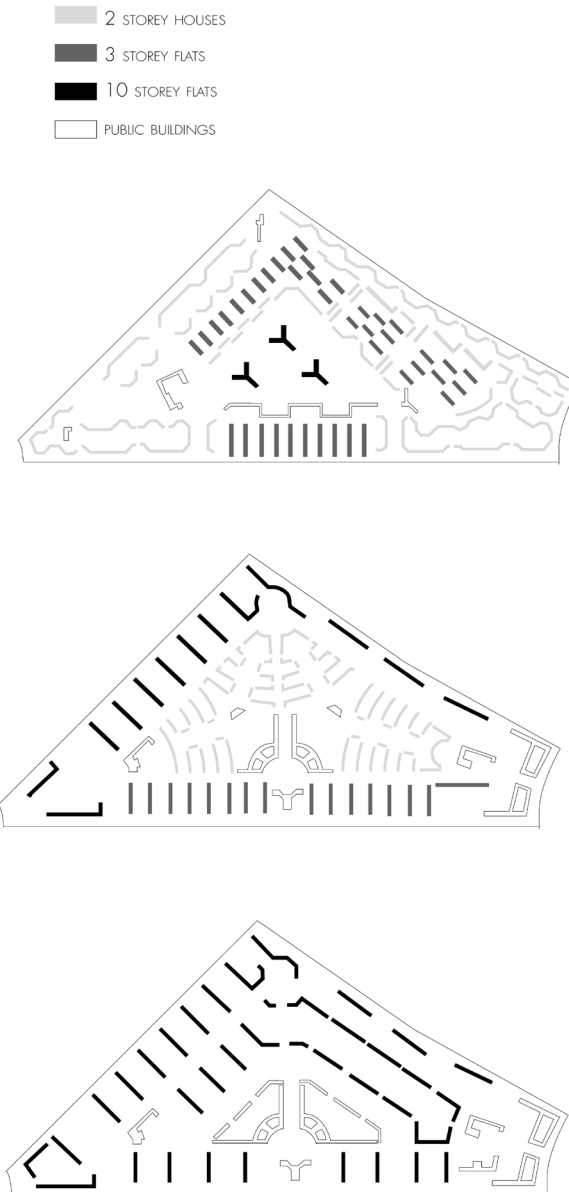


Fig 3: Diagrams showing a site developed at 100, 136 and 200 persons per acre, described by the authors as 'a mixture of low density housing and high density flats'. Source (quotation and image): Patrick Abercrombie and John Henry Forshaw, County of London Plan (London: MacMillan & Co., 1943), 27 and 79. Redrawn from the original.

and exploited as much for the architectural principals as the dynamic neighbourhoods and lifestyles it enabled. By comparison with the preceding fifty years in which architects had expounded their proposals based on rationalised methodologies substantiated by objective, numeric data (within which density ratios had played a key role), density was now framed as an experience: one of vibrant, bustling urbanity.

Density: a neoliberal tool

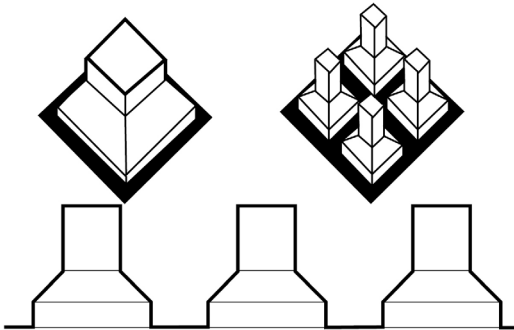
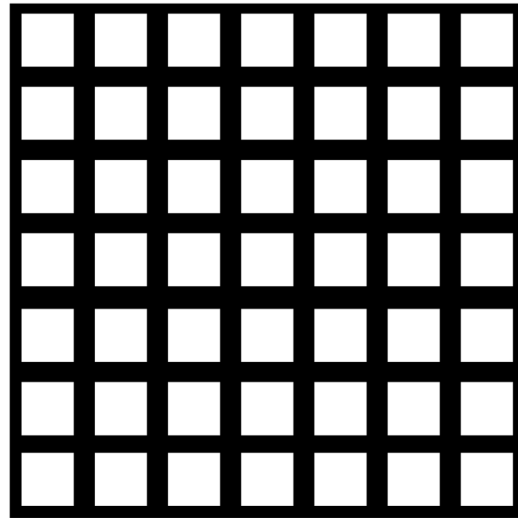
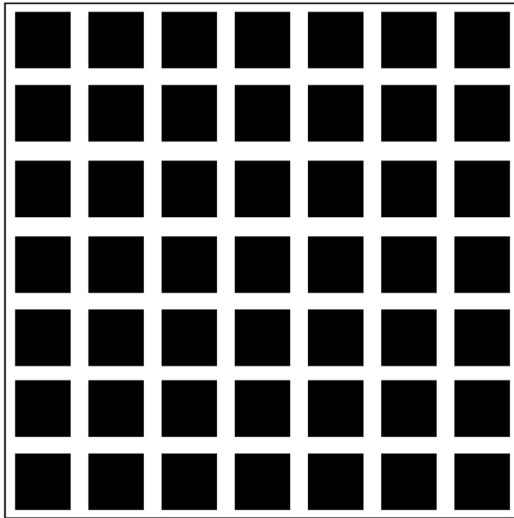
In spite of the Urban Task Force promoting a revival of the urban landscape lead by good design with imposition of regulations kept to a judicious minimum, the lure of density ratios as a numeric, and therefore quantifiable measure proved tantalising expedient, and planning policies were introduced that reinforced the densification objectives with numeric targets. Planning Policy Guidance (PPG3) introduced in 2000 set minimum density ratios nationally – immediately reversing the twentieth century doctrine of maximum densities to mitigate against overcrowding and congestion. The 2004 *London Plan* also included a density matrix: a simple table setting out maximum density ratios for hypothetical development sites according to their relative level of public transport connectivity and proximity to urban centres.³⁵ [Fig. 5] Zones were defined based on transport accessibility, which, coupled with site area, enabled easy calculation of permissible density ratios for any given development site.

While planning policy, and specifically density policy has remained relatively consistent since 2000, its manifestation in terms of housing architecture has not. In his recent planning history, Allmendinger notes that whereas the period 2004–7 was characterised by an emphasis on sustainability, inclusion and cultural diversity, post 2007, concern over the delivery of new housing and the impacts of the economic recession saw the emphasis shift

towards economic competitiveness and growth.³⁶ With density ratios positioned as technical limits to be manipulated through design to maximise revenue and financial return, the role of architecture in translating the numeric into built form comes into sharp focus. David Harvey suggests that the neoliberal process is one of commodification, where image and the enhancement of property values are the core objectives.³⁷ In the early 2000s, those objectives were at least veiled. The UTF emphasised design quality and the need for housing densities adequate to support the development of public transport and infrastructure, and architects had responded with urban housing projects at densities similar to those of the historic centres of UK towns and cities.³⁸ By the end of the decade, the references were scaled up, with urban villages, seemingly referencing Manhattan rather than the sleepy English archetype becoming the norm.

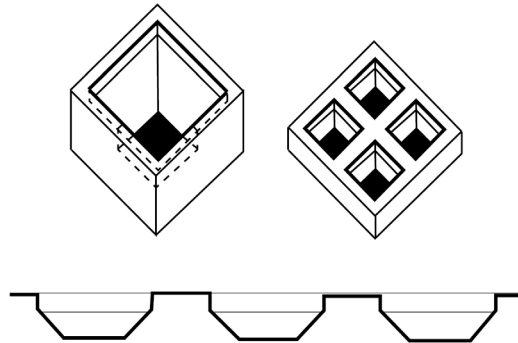
In this context, the role that architects had begun to play in promoting a lifestyle and image of urban living helped to reinforce a narrative around densification that focused on the social and convivial qualities of density.³⁹ In short, architects had dealt with density's image problem. Indeed, so revived by the opportunities to work in housing again, housing architects had begun to compile compendiums of typologies, documenting myriad design solutions to the broad challenge of densification – on one hand cataloguing their extensive design outputs, and on the other promoting their usefulness as technicians of the densification agenda.⁴⁰ Amongst the most meaningful of these was the *Housing Density Study*.⁴¹ It takes the density matrix as a framework and systematically explores how the density ratios prescribed within it could be manifest in terms of housing prototypes. [Fig. 6] It demonstrates how circulation, dwelling size, car parking and the urban or suburban context might shape housing architecture through a series of illustrated examples. Despite various morphological studies (following

THE PAVILION AND ITS ANTI-FORM



PAVILION

TAKING THE TYPICAL HIGH-DENSITY PAVILION FORM OF A LOW PODIUM SURMOUNTED BY A TOWER (A TYPICAL NEW YORK BLOCK), THE SAME AMOUNT OF FLOOR AREA CAN BE ACCOMMODATED IN THE 'ANTI-FORM'



COURT

A COURT ARRANGEMENT OCCUPYING THE 'NEGATIVE SPACE' OF THE CITY GRID AT APPROXIMATELY ONE THIRD THE HEIGHT OF THE PAVILION PROVIDES THE SAME FLOOR AREA

Fig 4: The pavilion and its anti-form. Figurative experiments developed by Leslie Martin and Lionel March. Taking a typical New York block of low podium surmounted by a tower, they demonstrate that the same floor area can be accommodated in the 'anti-form', a court arrangement occupying the negative space of the city grid at approximately one third the height. In the anti-form, the narrow street is also replaced by a series of open courts out of which an alternative 'grid of movement' would develop. Source: March and Martin, 'Speculations', 21 and 37–38. Redrawn from the original.

in the footsteps of Leslie Martin and Lionel March) that have sought to problematise the relationship between measured densities and the resulting built form, the extensive list of examples serve to illustrate possible, viable options for development. In many ways it represents a more comprehensive update to the text that Raymond Unwin had published a century earlier, demonstrating how density ratios can be translated into housing types, with illustrations (for the residents) and numbers (for the investors).⁴² The effect (although perhaps not the intent) is to provide investors contemplating the viability of a development site with even greater certainty than they were able to calculate from the simple correlation of site area and permitted densities. Using these examples, they have visualisations and housing prototypes that can be costed speculatively, providing greater surety around financial investment in housing. Furthermore, with the increased site densities being pursued by developers, the image of density over which architects have had such an essential influence has an increasingly critical role to play.

Part II: The density agenda and its manifestation in new housing architecture

It is its capacity to be both measured and therefore costed, while at the same time imagined and experiential, that casts density as such a critical instrument within neoliberal planning and development processes. Drawing on two recent East London housing projects it is possible to see how the malleability of density has facilitated its use as a mechanism for the extrusion of economic value, and its implications for housing architecture. The examples are taken as illustrative rather than representative but begin to demonstrate the 'double-agent' potential of density in action.

The examples are both located in Bromley-by-Bow, East London. Bromley-by-Bow is a rapidly changing area with a heterogeneous urban landscape comprising fragments of nineteenth

century terraced housing, early twentieth century mansion-style tenement buildings and mid-twentieth century 'mixed development'. These fragments take the form of estates – inwardly looking and developed in isolation from neighbouring lots, which has created opportunities for infill development and larger-scale redevelopment. For areas like Bromley-by-Bow, the Urban Renaissance agenda had huge persuasive potential – promising infill and consolidation, increased social and economic diversity and all the positive experiential benefits of a more vibrant and animated neighbourhood. At the same time, despite relatively low land values in the area (pre-2008), the proximity of public transport established potential for densification, bringing rapid inflation in land values.⁴³ The examples cited are two amongst numerous infill and redevelopment projects that have been undertaken through public-private partnerships or 'project based agencies' over the past decade.⁴⁴

Redevelopment of the Crossways Estate (since renamed as Bow Cross) was initiated in 2002, with construction work commencing in 2008.⁴⁵ It can be read as an example of the best intentions of the Urban Renaissance. The estate centred around three twenty-five-storey point-block apartment buildings that would be consolidated with new, lower-rise housing laid out in a clear network of streets and providing a better-defined landscape around the tower blocks. [Fig. 7] The infill development would also provide revenue to fund refurbishment of the existing tower blocks and new community facilities. The second example is the redevelopment of St Andrew's hospital site located a few hundred metres south of Bow Cross.⁴⁶ The planning application for the site was submitted in 2008, with construction starting in 2010. In this case, the development was delivered by a private housebuilder, supported by the London Development Agency.⁴⁷ [Fig. 8]

There is a step change in the density ratio between the redevelopment of Bow Cross and the

PTAL		0-1	2-3	4-6		
SUBURBAN	Large	150-200 35-55	150-250 35-65	200-350 45-90	hr/ha dw/ha	Large 3.8 – 4.6 habitable rooms per dwelling
	Medium	40-65	40-80	55-115		Medium 3.1 - 3.7 hr/dw
	Small	50-75	50-95	70-130		Small 2.7 – 3.0 hr/dw
URBAN	Large	150-250 35-65	200-450 45-120	200-700 45-185	hr/ha dw/ha	
	Medium	40-80	55-145	55-225		
	Small	50-95	70-170	70-260		
CENTRAL	Large	150-300 35-80	300-650 65-170	650-1100 140-290	hr/ha dw/ha	
	Medium	40-100	80-210	175-355		
	Small	50-110	100-240	215-405		

Table 1: Definition of terms - Density Matrix 2011

LOCATION	DENSITY	EXISTING BUILDING FORM/ MASSING	EXISTING BUILDING HEIGHT	PTAL	EXISTING BUILDING USES
Central	Very dense development	Large building footprints	Typically 4-6 storeys	Within 800m of International, Metropolitan or Major town centre or on main arterial route	Mix of different uses
Urban	Predominantly dense development	Terraced houses or Mansion blocks	Typically 2-4 storeys	Within 800m of a District centre or along an arterial route	Mix of uses
Suburban	Predominantly lower density	Detached and semi-detached houses Small building footprints	Typically 2-3 storeys		Predominantly residential

Fig 5: Density matrix with accompanying definition of terms, taken from London Plan (2011), revised since 2004. Source: Greater London Authority, 'The London Plan: Spatial Development Strategy for Greater London' (Mayor of London, July 2011).

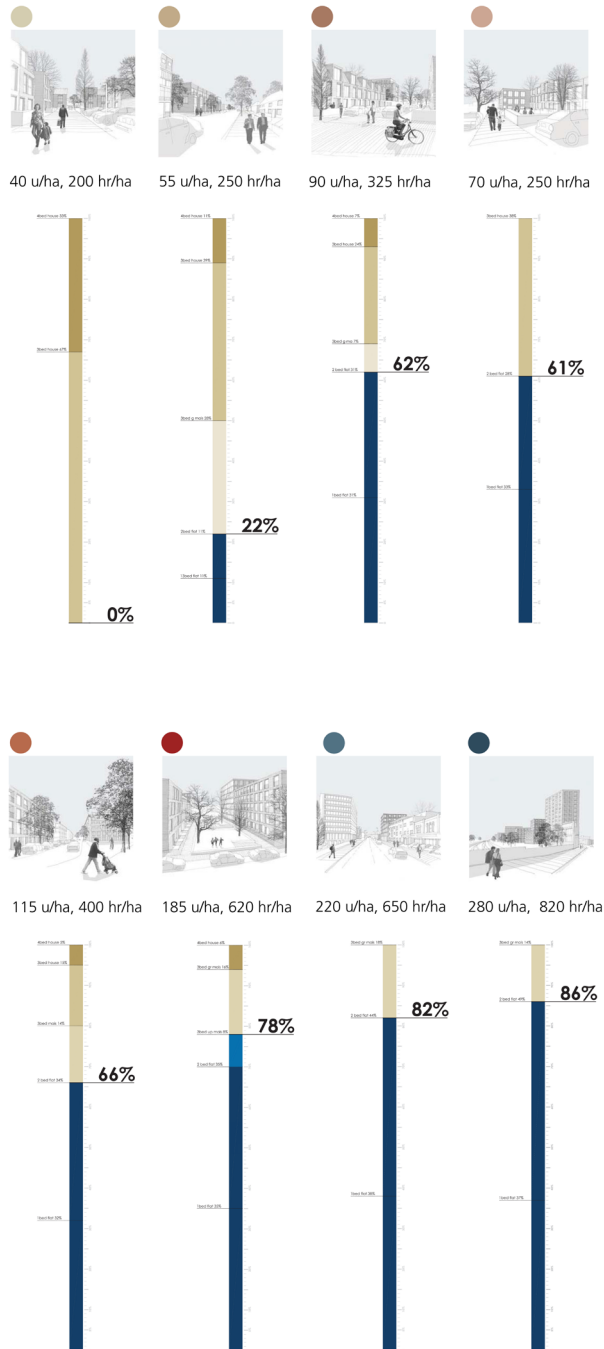


Fig 6: Diagram showing typology mix of the different illustration schemes referred to in the Housing Density Study. Source: Maccreanor Lavington Architects, Emily Greeves Architects, and Graham Harrington Planning Advice, 'Housing Density Study', 149.



Fig 7a



Fig 7b



Fig 8

Fig 7a: Bow Cross estate plan before redevelopment showing development site outline. Redrawn from the original.

Fig 7b: Bow Cross estate site plan before redevelopment and after – PRP architects. Redrawn from the original.

Fig 8: St Andrew's site plan – Allies and Morrison Architects. Redrawn from the original.

St Andrews development, and comparison between the housing architecture of the two schemes supports the shift that Allmendinger points to, in the way that the development agenda shifted following the onset of the global financial crisis. He argues that while planning policies and objectives remained largely consistent, the ends to which they were deployed changed, with the balance between private investment and public benefit tilted towards the protection of capital investment.⁴⁸ Unpacking the architecture of these schemes begins to highlight the intrinsic role that architects, and architecture, has played in facilitating appropriation of the broad principles of densification to enhance economic value. It draws on the agency attributed to architecture throughout each of the earlier episodes described above, with designers deriving efficient floor plates, maximising habitable room densities, and at the same time, helping to conjure an image of the lifestyle facilitated by the new typologies. Three key themes are drawn out: site layout and built form, housing typologies, and communal spaces and services. These serve to illustrate some of the consequences arising from the pursuit of higher density ratios in order to highlight architecture's role and the potential implications of a callous pursuit of more density, rentable space and profit, over the consideration of liveable and convivial housing.

Site layout and built form

In terms of optimising the development potential of a site, the layout and massing of the buildings clearly carries huge potential. Infill of vacant sites was identified by the UTF as an easy win for landowners, providing a means of consolidating fragmented urban landscapes, and at the same time exploiting available, undeveloped sites in existing urban neighbourhoods. The redevelopment of Bow Cross enacted these principles. The new housing was deliberately squeezed up to site edges, eliminating the grassy verges that had previously disconnected the estate from the neighbouring streets. [Fig. 9]

Medium-rise apartment buildings and town houses are laid out in terraces with clearly defined frontages and main entrances onto the streets, with private gardens and parking courtyards behind.

The estate now has a more coherent network of streets with clearly defined public and private spaces. The redevelopment, which retained most of the existing buildings on the site (as well as their inhabitants) increased the number of homes from 298 to 679, increasing the site density from approximately 85 dwellings per hectare (dw/ha) to 185 dw/ha.

By comparison, the three hectare site at St Andrews (compared with 3.6ha at Bow Cross), a former hospital site, was cleared for development. The new scheme accommodates 976 new homes at a density of 325dw/ha, or 964 habitable rooms per hectare (hr/ha). [Fig. 10] In terms of permitted maxima, those ratios are somewhere near the top of the range outlined in the *London Plan Density Matrix* for the most accessible and most centrally located sites in London. It plays out in the massing and layout of the site.

By comparison with the three to five storeys typical of the new housing at Bow Cross, the buildings at St Andrews are typically nine to ten storeys, with narrower street widths too. Whereas the massing in the earlier scheme represents the formal aspirations of the UTF report, the massing and site layout at St. Andrews takes the notional form of the Barcelona apartment buildings or Berlin 'block' buildings espoused as exemplars by the UTF authors, but the height of the buildings and depth of plan are scaled up. Indeed, closer scrutiny of the section suggests that separation distances between the buildings have been squeezed to the minimum permissible in order that ground floor apartments receive minimum required daylight levels.



Fig. 9



Fig 10

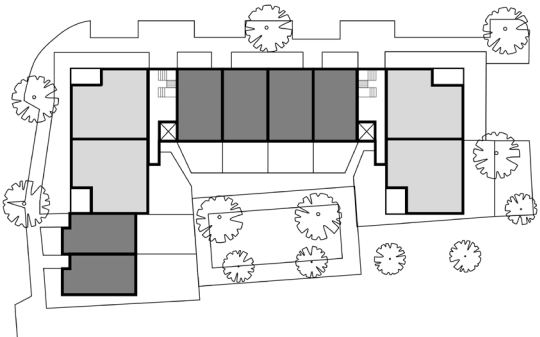


Fig 11

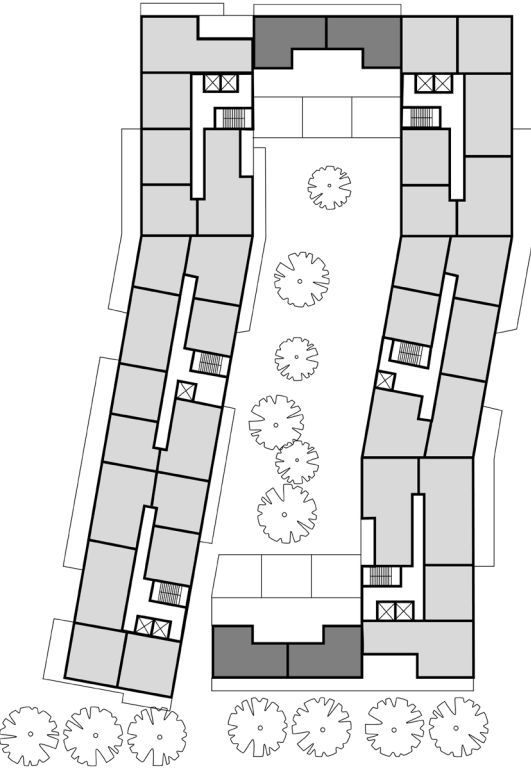


Fig 12

Fig 9: Bow Cross estate with new housing (foreground) and refurbished tower block. Photo: author.
 Fig 10: St Andrew's new housing, Allies and Morrison and Maccreanor Lavington Architects. Street view. Photo: author.
 Fig 11: Block layout at Bow Cross showing a mix of houses and apartments with entrances onto the street and circulation cores shared between two or three apartments per floor. Redrawn from original.
 Fig 12: Block layout at St. Andrew's showing predominantly apartments with entrances to circulation cores from the private courtyard. Stairwells are shared between six or seven apartments per floor, up to 70 in total. Redrawn from original.

Building and housing typologies

The shift in the scale of the buildings also plays out in the layout and spatial organisation of the housing itself. Bow Cross has a mixture of terraced houses and medium-rise apartments. The apartment buildings have front doors onto the street, and stairwells shared between two apartments per floor. [Fig. 11] While not lavish in their décor, the natural daylight, views out to the street, and relatively small numbers of residents sharing the space make the stairwells and lobbies potentially sociable spaces where residents encounter their neighbours and recognise and acknowledge familiar visitors. By comparison, at St Andrews the deeper plan is formed of two apartments on either side of a central corridor. The apartments are predominantly single-aspect: one faces the street, the other into the courtyard.

The double-banked corridor is an efficient layout, with optimum ratios between residential floor area and circulation space (excellent for investors seeking maximum rental return). [Fig. 12] But it also has important consequences, both for the relationship between apartment and street, and between neighbours. Whereas the dual aspect of the Bow Cross apartments serves to delineate a front and rear elevation, enabling more and less-private spaces within the dwellings, the move to single-aspect typologies removes this capacity for flexibility and therefore control. All elevations, both street and courtyard-facing are rendered 'front elevations', with privacy moderated through residents' interventions: curtains or blinds, or by technical devices such as mechanical ventilation mitigating the need for (and option to) open windows. There are also examples of behavioural codes: no ball games in the courtyards, no doormats in corridors, no bikes stored on balconies.⁴⁹ These rules, in part a necessary consequence of the advanced fire strategies required for residential buildings with such high capacities, can also be read as controlling devices, negating the need for consensually agreed behaviours in shared spaces within and around the building.

Hence, while the double-banked corridor layout and single-aspect apartment typologies (of which St Andrews is a good example) generate the density ratios demanded by developers and their investors, the architects' role extends beyond this. Equally critical is the look and feel of the architecture, which supports the careful programming and management plans that seek to control how spaces might be used. The narrow, artificially lit corridors with elegant yet generic finishes and furnishings, in part a consequence of an efficient layout, can also be read as a means of inhibiting meaningful neighbourly encounter with interiors that allude to the uncanny anonymity of hotel lobbies and corridors.⁵⁰ In these spaces the idiosyncratic, personal and chaotic character of the domestic is suppressed in lieu of a controlled, predictable and therefore, rentable, residential 'product'. They are an example of the ways in which the housing architecture serves to enable ever higher density ratios without concession to the potentially limiting factors of noise, congestion and bustle in the spaces around the home. The social opportunities created by density and proximity between neighbours – those celebrated by the architects of the low-rise, compact urban schemes of the 1960s and 70s – are essentially designed out.

Communal spaces and commercial services

While the anonymity of the shared lobbies and hallways in the higher density scheme might have marked consequences for the neighbourliness of the building, it is also a designed condition that is part of a serviced residential experience, akin to that in a hotel, or the convenience-oriented lifestyle advocated by Le Corbusier in his early proposals for the modern apartment complex. He famously championed the opportunities that higher residential densities could facilitate, liberating housewives from the drudgery of housework with a plethora of communal services. Dependent upon the scale of the development, these might include concierge, crèche, hairdressers and cleaning services, as well

as shared utilities such as central heating and hot water, made viable by the vertical organisation and proximity of so many homes.⁵¹ Indeed the type and provision of communal services can have significant socio-political consequences. Le Corbusier recognised this fact, yet the role they play as part of housing development under a neoliberal agenda is disregarded.

Both Bow Cross and St Andrews include examples of services and spaces facilitated by the site density ratio, but the nuances of what is provided, how and for whom, is less consistent. During the late 1990s and early 2000s, public-private partnerships in housing delivery were promoted as a means of enabling investment in the provision of public services. The new community centre, housing office and games court at Bow Cross would be an example of this.

Along with a number of children's play parks, these spaces are all freely accessible for residents and cater for various community groups and charities. At St Andrews the comparable list is extensive and includes underground parking, bike stores, an on-site gym, a GP surgery, a convenience store, concierge services, and a car share scheme. The first two on this list are spatial provisions required to supplement the apartment typologies on the site. The remainder, however, are an array of revenue-generating services. Whereas at Bow Cross, private financial investment is ostensibly being used to fund community spaces and amenities, at St Andrews, most of the amenities are paid-for services. The density of housing units also represents a density of demand. The higher the concentration of demand, the greater the interest from companies to run these services as revenue-earning franchises. The zero-parking policy applied by the planning authority to the St Andrew's development creates a concentrated market for a car-rental scheme. Similarly, a gym is more necessary when one's home is reduced to minimal space standards and has no space for

squat thrusts. In this way, the architecture of density provides further means of extracting capital out of the basic daily routines of home.⁵²

These themes and the two selected case studies are in no way intended to represent, or even describe, an architecture of density. They do, however, serve to demonstrate how architects' efforts to increase site densities have profound consequences for the lived experience of the residential environments created. The seminal urban critic Jane Jacobs criticised Le Corbusier's vision of 'maximum individual liberty' as 'not liberty to do anything much, but liberty from ordinary responsibility'.⁵³ There is an assumption inherent in her criticism that responsibility is equated with a kind of civility reinforced through normative social practices. Applied to thinking about the home and its environment, these practices might include the mundane and undervalued labour associated with the domestic: doing laundry, repairing a bicycle, hosting visitors. Where these practices, generic and unremarkable as they may be, begin to be curtailed by the architecture of the home and its environment, this has consequences for the interplay of social relations.⁵⁴ Hence the motivations underpinning these morphologies in housing architecture ought to be a central concern for the architects commissioned with briefs for high-density housing.

Conclusions

In each of the historic episodes considered briefly above, two recurring themes are apparent: one is the importance of patronage to the architect's role, and the second is the continued ambiguity of measured density ratios and the experience of crowding, proximity and bustle with which it is associated. Housing architects from the 1850s onwards recognised that density ratios measured in terms of homes or rooms are principally economic metrics. Raymond Unwin's famous manifesto for the garden cities illustrates various ways in which architecture could act to extrude the economic potential of

density. In Unwin's case the benefactor was clear, whereas the complexity of neoliberal development economics makes that relationship less explicit. Architects might be employed by a developer, who has in turn been appointed by a local authority, who has sought funding for a development from private investment channels, with housing developed for private sale, and sometimes rental. Far from a mere technical issue, architects' translation of density ratios into built form has significant consequences for each of these parties.

The measurability of density ratios gives them great veracity, enabling developers to calculate potential returns based on ratios of rentable floor space per square meterage of site. But density is different from cold, hard metrics like rental values or internal floor area in that it is laden with myriad qualitative assumptions. In the early twentieth century, it was associated with crowding and congestion. By the 1970s, that conception had shifted, and density acquired a stigma associated with tall buildings and pavilion-like residential buildings in windswept landscapes. Since the turn of the twenty-first century, density has been rebranded once more. In planning discourse, it has associations with land-use efficiency, consolidation of urban development and increased viability for public transport and other services. Housing development supported by the state, as in the Bromley-by-Bow case studies, has been promoted on the basis of potential environmental and social benefits for the wider community. Convenient access to public transport and on-site amenities form part of a commodified housing 'offer' for prospective residents. Meanwhile, as the example of St Andrew's begins to demonstrate, floor plans and spatial configurations are poured over by their architects in pursuit of higher density ratios and higher profit returns for investors. With each new development that pushes at permitted density limits, a new benchmark for the development potential of nearby sites is established. The financial incentive to push density ratios higher still

challenges designers to devise yet more deterministic housing programmes to enable and facilitate the increased numbers.

Equally important is the narrative to entice residents to buy into this new residential paradigm. The marketing of new housing being developed under the densification agenda conjures an experience of urban living – coffee on the balcony, speedy connections to the city centre, a view from above on the chaotic street below – are all part of this renewed image. It is one that architects have played a crucial role in imagining, articulating and bringing into fruition. For the neoliberal process, as David Harvey describes it, image is critical.⁵⁵ The commodity value of everything – land, housing, the lifestyle and convenience associated with having a gymnasium in your apartment building – is driven by image. Drawing on references to historic European cities, or increasingly, the more frenetic density conditions of New York and Tokyo, architects have contributed to renewing the image of density, enhancing and facilitating the capitalisation that is its primary cause.

There is clearly a need to distinguish between the density ratio that is measured, the experience of density that is 'sold', and the lived reality of density as it manifests in housing architecture. It may be that each require different approaches, different methods of measuring, visualising and interpreting, but each should be part of the architect's concern. Instead, as architect and theorist Roemer van Toorn suggests, the architectural profession has tended towards denial of the broader implications of their pursuits.

Instead of taking responsibility for the design, instead of having the courage to steer flows in a certain direction, the ethical and political consequences arising from the design decisions are left to market realism, and the architect retreats into the givens of his discipline.⁵⁶

In retreating in this way, architecture relinquishes its inherent agency. Taken at its most basic, density ratios are crude instruments of economic calculation. The willingness of the architectural profession to manifest the desires of dominant capital forces in formal, elegant typologies valorises the use of mechanisms such as density within the development agenda. Meanwhile, positing density as a simple ratio, a Euclidean concept empty of social, political and emotional significance reduces the scope for an expanded, qualitative reading that values the potential arising from conditions of proximity, congestion and chaos as part of a collectively negotiated urban experience. The acute significance of density as a tool of the neoliberal process is borne out of its inherent capacity to hold myriad different meanings. The divergence between the imagined experience of density – as either overcrowded, congested city, or vibrant and animated urban setting – and the cold measurability of density ratios provides a flexibility that responds to the covert operations of neoliberal economics.

Notes

1. Meta Berghauer Pont and Per Haupt, *Spacematrix: Space, Density and Urban Form* (Rotterdam: NAI Publishers, 2010), 67–68.
2. Richard Rogers was appointed by the then Deputy UK Prime Minister, John Prescott, to chair the panel following his publication *Cities for a Small Planet*, which iterated the danger of continued sprawling urban expansion and championed a revival of more compact, residential urban centres.
3. Urban Task Force, *Towards an Urban Renaissance* (London: Department of the Environment, Transport and the Region, 1999), 59.
4. UTF, *Towards an Urban Renaissance*, 59–64; Peter Hall and Colin Ward, *Sociable Cities: The Legacy of Ebenezer Howard* (Chichester: John Wiley & Sons, 1999).
5. Richard Rogers, Chairman of the UTF in his introduction to the report *Towards an Urban Renaissance*, 7.
6. Phil Allmendinger, *New Labour and Planning: From New Right to New Left* (London: Routledge, 2011), 157.
7. Ben Clifford and Mark Tewdwr-Jones, *The Collaborating Planner? Practitioners in the Neoliberal Age* (Bristol: Policy Press, 2013).
8. David Harvey, 'The Right to the City', *New Left Review* 53 (October 2008).
9. Kate Barker's 'Review of Housing Supply' report emphasised the quantitative need for new housing based on population growth and decreasing household size driving demand for new homes. 'Review of Housing Supply: Delivering Stability: Securing Our Future Housing Needs' (Her Majesty's Stationery Office, 2004), 15–16.
10. Anthropologists, architects, geographers, economists, planners, developers and psychologists have variously considered the impact of density at different scales, measuring different units, or indeed, not measuring at all but speculating and conceptualising. A detailed review of the breadth and diversity of this study is outlined in Boyko and Cooper's article 'Clarifying and Re-Conceptualising Density', *Progress in Planning* 76 (2011): 1–61; and Arza Churchman, 'Disentangling the Concept of Density', *Journal of Planning Literature* 13, no. 4 (1999): 390.
11. Churchman, 'Disentangling the Concept of Density', 389.
12. Nishat Awan, Tatjana Schneider, and Jeremy Till, *Spatial Agency: Other Ways Of Doing Architecture* (London: Routledge, 2011), 38.
13. Architects and historians have explored the consequences of alternate political strategies for the form and composition of the city at length. Through a history of changing urban form, Ludwig Hilberseimer's *Nature of Cities* attached social, economic and political implications to conditions of compaction and dispersal – notionally positioning density as a rationale for his proposed dissolution of the compact urban centre. Ludwig Hilberseimer, *Nature of Cities* (Chicago: Paul Theobald, 1955).
14. Miles Glendinning and Stefan Muthesius, *Tower Block: Modern Public Housing in England, Scotland,*

- Wales and Northern Ireland* (New Haven: Yale University Press, 1994), 37; Berghauer Pont and Haupt, *Spacematrix*.
15. These reports included George Godwin, *Another Blow for Life* (London: Wm. H. Allen, 1864), The Strand (2nd Annual Report on Sanitary Conditions of the Strand, 1858), *The Report of the General Board of Health* (1850) and Charles Booth's '*Descriptive Maps of London's Poverty*' (1889) which mapped the geographical coincidence between social status and the density of occupancy of houses.
 16. Meta Berghauer Pont and Per Haupt, 'City or Sprawl? The Need for a Science of Density', *'Scape*, no. 1 (April 2007): 60.
 17. Anthony S. Wohl, *The Eternal Slum: Housing and Social Policy in Victorian London*, 2002 ed. (London: Edward Arnold Publishers, 1977).
 18. Robin Evans, 'Rookeries and Model Dwellings: English Housing Reform and the Moralities of Private Space', in *Translations from Drawing to Building and Other Essays* (London: Janet Evans and Architectural Association Publications, 1978), 96.
 19. A detailed review of these housing models is set out in S. Martin Gaskell, *Model Housing: From the Great Exhibition to the Festival of Britain*, Studies in History, Planning and the Environment 10 (London: Mansell Publishing, 1986).
 20. Raymond Unwin, *Nothing Gained by Overcrowding! How the Garden City Type of Development May Benefit Both Owner and Occupier*, 3rd ed. (Garden Cities and Town Planning Association, 1918), 3.
 21. Hall and Ward, *Sociable Cities*.
 22. Note that Howard's proposed garden cities were based on a density of approximately 225 persons per hectare or 45dw/ha (based on the average household size of five persons in 1898). Hall and Ward, *Sociable Cities*, 22.
 23. Le Corbusier, *The City of To-Morrow*, Translated from the 8th ed. (London: John Rodker, 1929), 281.
 24. Walter Gropius, *The New Architecture and the Bauhaus*, trans. P. Morton Shand (London: Faber and Faber Limited, 1935).
 25. The plan was published following the Barlow Commission (1940) which concluded that some decentralisation was necessary in order to improve the general conditions within UK towns and cities, but that the density of the inner-city areas ought to be maintained in accordance with 'industrial conditions' (i.e., employment). Patrick Abercrombie and John Henry Forshaw, *County of London Plan* (London: MacMillan & Co., 1943), 9.
 26. The tower blocks were part of an extraordinary drive towards modernisation during and after World War II. New housing was designed based on a 'greatly expanded science of habitation' – both technical and socio-psychological. Glendinning and Muthesius, *Tower Block*, 2.
 27. Nicholas Taylor, *Village in the City* (London: Maurice Temple Smith Ltd, 1973); Jane Jacobs, *Death and Life of Great American Cities*, new edition (Random House Inc, 1997).
 28. Lionel March and Leslie Martin, 'Speculations', in *Urban Space and Structures* (Cambridge: Cambridge University Press, 1972). Glendinning and Muthesius also argued that the motivation for higher densities was motivated by aesthetic as well as social and economic factors. Glendinning and Muthesius, *Tower Block*.
 29. Neave Brown, 'The Form of Housing', *Architectural Design* 37 no. 9 (September 1967): 433.
 30. A detailed history of some of the seminal examples of housing from this period has recently been published by Mark Swenarton. *Cook's Camden: The Making of Modern Housing* (London: Lund Humphries Publishers Ltd, 2017).
 31. This coincided with the gradual withdrawal of local authorities from housebuilding. A fuller analysis of this shift, along with an excellent diagram showing UK housing production over the past sixty years can be found in Alastair Parvin et al., *A Right to Build: The Next Mass-Housebuilding Industry* (Sheffield: Architecture 00:/ and University of Sheffield School of Architecture, 2011).
 32. The Planning Policy Guidance Note (PPG) series introduced in 1988 gave little attention to the strategic role of density for spatial planning. Nicola Dempsey

- and Mike Jenks, 'The Language and Meaning of Density', in *Future Forms and Design for Sustainable Cities* (Amsterdam: Architectural Press, 2005), 295; Michael Collins and Patrick Clarke, 'Planning Research Programme: The Use of Density in Urban Planning' (Department of the Environment, Transport and the Region, 1998), 15.
33. Professor Sir Peter Hall, 'Foreword: Nothing Gained by Overcrowding! A Centenary Celebration and Re-Exploration of Raymond Unwin's Pamphlet "How the Garden City Type of Development May Benefit Both Owner and Occupier"' (London: Town and Country Planning Association, April 2012), 2 <https://tcpa.org.uk>
 34. New developments were to deliver attractive, compact urban neighbourhoods, driven by good design principles rather than restrictive, numeric targets and limits. UTF, *Towards an Urban Renaissance*, ix. The planning theorist and historian Phil Allmendinger describes the 'Urban Renaissance' as design and culture-led, situating the architecture of these new urban neighbourhoods as central to their success. Allmendinger, *New Labour and Planning*, 66.
 35. The density matrix was first developed as part of a study carried out by Llewelyn-Davies and The Metropolitan Transport Unit, *Sustainable Residential Quality: Exploring the Housing Potential of Large Sites* (London: London Planning Advisory Committee, 2000). The report was developed to support the emerging emphasis on the city region and what McFarlane refers to as 'tentpole densities' – poly nucleated centres within a regional strategy. This characterises the plan for London, with identified urban 'villages' being positioned as cores for transport and infrastructure provision and the development potential of sites calculated according to their proximity to these centres. Colin McFarlane, 'The Geographies of Urban Density: Topology, Politics and the City', *Progress in Human Geography* 40, no. 5 (1 October 2016): 629–48. Duncan Bowie also gives a very thorough review of the policy in *Politics, Planning and Homes in a World City* (Oxon: Routledge, 2010).
 36. Allmendinger, *New Labour and Planning*, 156.
 37. David Harvey cited in Berghauer Pont and Haupt, *Spacematrix*, 74–75.
 38. Islington in London and Brighton in Sussex were both cited as examples of attractive, vibrant, residential urban environments. UTF, *Towards an Urban Renaissance*, 27.
 39. Margit Mayer, Catharina Thörn, and Håkan Thörn, eds., *Urban Uprisings: Challenging Neoliberal Urbanism in Europe* (Palgrave Macmillan, 2016).
 40. The a+t publications are a good example of these. Javier Mozas, *Density: New Collective Housing* (Madrid: a+t ediciones, 2006); Javier Mozas and Aurora Fernandez Per, *Dbook: Density, Data, Diagrams, Dwellings* (Madrid: a+t ediciones, 2007).
 41. Maccreeanor Lavington Architects, Emily Greeves Architects, and Graham Harrington Planning Advice, 'Housing Density Study' (Greater London Authority, 30 August 2012). The authors of the report have established reputations as prominent housing architects, delivering a number of critically revered schemes, including substantial involvement with the St Andrews development.
 42. The density matrix, in essence, provided a simple equation through which the economic value of any development site in London could be valorised. Margit Mayer and others have characterised neoliberal urbanism as the deliberate commodification of public space extending to the provision of housing that, in the UK, is now almost entirely delivered by private developers rather than the state. *Urban Uprisings*, 65. The density matrix is published as part of the London Plan Greater London Authority, 'The London Plan: Spatial Development Strategy for Greater London' (Mayor of London, July 2011).
 43. Over the past decade the vast majority of the former council-owned estates in the area have been transferred to Registered Social Landlords and Management organisations. For more information see 'Poplar HARCA: About Us' (Poplar HARCA, 2004). Tenure status for the Bromley-by-Bow ward is almost 50 percent socially rented (compared with the 17 percent average for London). Office for National Statistics, 'Key Figures for 2001 Census: Census

- Area Statistics', (London: Office for National Statistics, 2001).
44. 'Project-based agencies' is a term used by Berghauser Pont and Haupt, *Spacematrix*, 74–75.
 45. The redevelopment of the estate was funded through a mixture of private and public finance. PRP architects were appointed to develop the masterplan and new housing, including refurbishment of the original 1960s tower blocks. Swan Housing Group, 'Bow Cross: Awards Entry for Best Regeneration Project' (Billericay: Swan Housing Group, 2014).
 46. These examples, along with a number of others were considered in much greater detail as part of my PhD on the subject of urban densities and their design implications. Claire Harper, 'Compaction, Scale and Proximity: An investigation into the spatial implications of density for the design of new urban housing', (PhD dissertation, University of Westminster, 2013), <https://westminsterresearch.westminster.ac.uk>.
 47. The LDA was a publicly funded organisation established as a functional body of the Greater London Authority (GLA). Its purpose was to provide funding for projects that would support sustainable economic growth for the London region.
 48. Allmendinger, *New Labour and Planning*, 156.
 49. Notices insisting that children should be supervised, prohibiting noise after 9 pm, and forbidding barbeques, ball games or skating are commonly found in the communal spaces of higher-density developments.
 50. Geographers Ash Amin and Nigel Thrift describe the benefits of familiar and recurring encounter in terms of broad social benefits: recognition, understanding and belonging. They point to the "micro-public" sites of compulsory daily interaction' – stairwells, front gardens, school gates – as sites of greater socio-political significance than the designed public spaces of town squares and public streets. Amin and Thrift cited in Ruth Fincher and Kurt Iveson, *Planning and Diversity in the City* (Basingstoke: Palgrave MacMillan, 2008), 14.
 51. 'By attaining order we arrive at liberty', he wrote, suggesting that the provision of domestic services, hitherto the privilege of the wealthy, would liberate housewives from enslavement to domestic service. Corbusier, *The City of To-Morrow*, 216–17.
 52. This trend is extrapolated even further by models such as The Collective, where minimal private dwelling spaces are supplemented by communal lounge, dining, cinema, games rooms and gardens. The Collective Partners LLP, 'The Collective / Co-Living' (The Collective, 2015).
 53. Jacobs, *Death and Life of Great American Cities*, 20.
 54. Social geographer Sophie Watson proposes that the way the public-private division is understood remains a key part of how people live together in cities. She suggests that behaviour that is accepted and acceptable relates more to socio-cultural notions of privacy than to the idea of a body politic. Sophie Watson, *City Publics: The (Dis)Enchantments of Urban Encounters* (Oxon: Routledge, 2006), 60.
 55. David Harvey cited in Berghauser Pont and Haupt, *Spacematrix*, 74–75.
 56. Roemer van Toorn, 'No More Dreams? The Passion for Reality in Recent Dutch Architecture' (2007) cited in Nishat Awan, Tatjana Schneider, and Jeremy Till, *Spatial Agency: Other Ways of Doing Architecture* (London: Routledge, 2011), 39.

Biography

Claire Harper is an architect and educator. Her research interests focus on the design of housing, residential landscapes and the procurement systems in which they are cultivated. Her doctoral thesis, *Compaction, scale and proximity: an investigation into the spatial implications of density for the design of new urban housing*, presented a critique of the dominance of quantitative measures in housing design and was shortlisted for the RIBA President's Award for Outstanding PhD Thesis in 2015. As a practitioner, she has worked for architectural practices in The Netherlands and England (London and the North East) and currently runs a small design studio alongside her teaching and research.